

**Analysis of Cancer Incidence in a Neighborhood in Mountain View, CA**  
**California Cancer Registry**  
**Summary, Questions and Answers**  
**September, 2012**

**Summary**

More cases of non-Hodgkin lymphoma occurred near Moffett Field from 1996-2005 than would be expected. Since then the number of cases has dropped to a level that is within the range of what would be expected. The cause of the increase in cases of non-Hodgkin lymphoma from 1996-2005 is not known. Health agencies are continuing to monitor.

**Q&A**

**1. What did you find in your analysis of cancer near the former Moffett Field Naval Air Station in Mountain View?**

- A. The Greater Bay Area Cancer Registry, a regional affiliate of the California Cancer Registry (CCR), examined three census tracts in the neighborhood of the Middlefield-Ellis-Whisman Superfund site in Mountain View. Scientists compared the number of cancer cases that actually occurred in the census tracts with the number that would be expected to have occurred, on average, if residents in these census tracts had the same incidence of cancer as the surrounding Santa Clara Region (which consists of Santa Clara, Monterey, Santa Cruz, and San Benito counties). Scientists looked for types of cancer that have been associated with exposure to the chemical TCE (trichloroethylene): kidney cancer, liver cancer and non-Hodgkin lymphoma. TCE was found to be contaminating soil and groundwater in the area in the early 1980s.

The occurrence of cancer cases in the Mountain View census tracts was similar to the occurrence of cancer cases in the Santa Clara Region for liver cancer and kidney cancer. However, researchers found a statistically significant increase in cases of non-Hodgkin lymphoma from 1996 to 2005. During this period, 17 cases were expected and 31 were found. Since then, there has not been statistical evidence of a consistent or current increase in non-Hodgkin lymphoma.

**2. Should residents in the area be concerned?**

- A. As the data in the report indicates, residents in the immediate area studied currently do not necessarily need to be any more concerned than residents in the surrounding area because there is no statistical evidence of a consistent or current increase in non-Hodgkin lymphoma in the area examined. While it is understandable that some people may be concerned, cancer is almost always caused by a combination of factors that interact in ways that are not yet fully understood.

**3. Why was this report done?**

- A. At the request of a television reporter, the Greater Bay Area Cancer Registry reviewed the incidence of trichloroethylene (TCE)-associated cancers occurring in a neighborhood in Mountain View, CA.

**4. Is it common to do such a report?**

A. Yes.

**5. What is the California Cancer Registry?**

A. The California Cancer Registry (CCR) is California's statewide population-based cancer surveillance system. CCR collects information about almost all cancers diagnosed in California. This information furthers our understanding of cancer and is used to develop strategies and policies for its prevention, treatment, and control. CCR is recognized as one of the leading cancer registries in the world, and has been the cornerstone of a substantial amount of research on cancer in the California population.

**6. What is the relationship between the registry and the California Department of Public Health?**

A. CCR is a program of the California Department of Public Health's Cancer Surveillance and Research Branch.

**7. What is non-Hodgkin lymphoma?**

A. Non-Hodgkin lymphoma (also known as non-Hodgkin's lymphoma, NHL, or sometimes just lymphoma) is a cancer that starts in cells called lymphocytes, which are part of the body's immune system. Lymphocytes are in the lymph nodes and other lymphoid tissues (such as the spleen and bone marrow). Non-Hodgkin lymphoma is the fifth most commonly diagnosed cancer among California men and women.

**8. Why did some people get non-Hodgkin Lymphoma?**

A. We don't know. Cancer is almost always caused by a combination of factors that interact in ways that are not yet fully understood. Non-Hodgkin lymphoma (NHL) represents a group of different blood cell cancers, the causes of which are probably different. Each person's risk of developing NHL is affected by different factors. Men and older persons get NHL most commonly, but some types are more common in women and younger persons. According to the American Cancer Society, risk factors for developing NHL include exposures to certain chemicals, such as benzene, and certain weed and insect-killers, having a weakened immune system, receiving radiation therapy and some types of viral infections, including HIV.

**9. The neighborhoods that you studied are near a superfund site that has TCE contamination. Did TCE cause these cancers?**

A. Although some studies have found an association between exposure to TCE and increased risk of developing non-Hodgkin lymphoma, it is not possible to determine the exact cause of the cancers from these results. Being near a chemical doesn't necessarily mean that the individual actually came in contact with the chemical or that the chemical caused the disease.

Cancer is a complex set of diseases caused by a mix of genetic, behavioral, and environmental factors. Scientists can rarely say exactly what caused a cancer to develop in any individual. Even cancers of the same type, like non-Hodgkin lymphoma, have various subtypes with different causes and risks.

For the cancers that were found, we have no information about whether the individuals were exposed to TCE at home or work, anything else they were exposed to, how long they lived in the area or other risk factors. It is possible that the people with cancer would have developed the disease anyway, no matter where they lived, if all other factors remained the same. The fact that there was not an increase in the other cancers associated with TCE and that the increase in cases of non-Hodgkin lymphoma was limited to only one time period makes the role of TCE uncertain. Also, it is much more difficult to identify a specific cause because it is almost impossible to reconstruct exposures and behaviors in the years before the cases occurred. The analysis by the Greater Bay Area Cancer Registry is simply an analysis of the incidence of three types of cancer in one neighborhood.

**10. Some people may have moved from the area. How do you know that you have counted all of the cases of cancer?**

- A. The California Cancer Registry (CCR) collects information about all cases of cancer diagnosed in California residents according to state law. Only the address at the time of diagnosis is available to CCR as obtained from the medical records. CCR is not able to identify people who once lived in the area and developed a cancer after moving. In addition, CCR data cannot identify past exposures in people who resided in the area at diagnosis but lived elsewhere prior to diagnosis.

**11. Are there high rates of any other cancers in those neighborhoods?**

- A. The occurrence of cancer cases in the Mountain View census tracts was similar to the occurrence of cancer cases in the Santa Clara Region for liver cancer and kidney cancer. In this analysis, researchers looked for types of cancer that have been associated with exposure to TCE.

**12. Does the incidence of non-Hodgkin lymphoma mean that this is a cancer cluster?**

- A. The analysis has established that while the number of non-Hodgkin lymphoma cases diagnosed in the area between 1996 – 2005 was greater than expected, the incidence has subsequently declined to the expected range in more recent years. The reasons for this cannot be determined from the available data, so at this time it is not certain that this represents a true cancer cluster because:
- It appears that no statistically significant elevation existed prior to this time (1988-1995) or in the most recent period (2006-2010).
  - There is a lack of evidence of a consistent or current elevation in non-Hodgkin lymphoma occurrence in this neighborhood.
  - The Centers for Disease Control states that to be considered a true cluster, cancer cases must be of same type or proven to have the same cause.
  - The term ‘non-Hodgkin lymphoma’ refers to a group of related but different diseases which have different characteristics and causes.
  - The cause of this increased number of non-Hodgkin lymphoma cases cannot currently be linked to any specific environmental exposure, including TCE.

- Although non-Hodgkin lymphoma is significantly increased for one of the three time periods examined, it is based on small numbers and any difference may be due to random fluctuations rather than a true excess of non-Hodgkin lymphoma.
- The number of cancer cases in the area of concern may be high simply by chance, especially due to the small numbers of cases within the small geographic area studied.

Therefore, CDPH believes that for these reasons, for this historical and limited elevation, it cannot be determined from the available data that this represents a true cancer cluster. CDPH will continue to monitor the number of cases in this area.

### **13. What is TCE?**

- A. TCE (trichloroethylene) is a nonflammable, colorless liquid with a somewhat sweet odor and a sweet, burning taste. It is used mainly as a solvent to remove grease from metal parts, but it is also an ingredient in adhesives, paint removers, typewriter correction fluids, and spot removers. Trichloroethylene is not thought to occur naturally in the environment. However, it has been found in underground water sources and many surface waters as a result of the manufacture, use, and disposal of the chemical.

### **14. What other health problems can TCE cause?**

- A. The effects of exposure to hazardous substances depend on the concentration, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present. Exposures to low concentrations of TCE over a long period of time may impact the immune system or cause nerve, kidney, and liver damage. There is some research that suggests possible impacts to the developing fetus, such as immune system and cardiac development, although the extent of these effects is not clear and is based on animal studies. TCE exposure is not uncommon in outdoor or indoor air. Again, the amount and duration of exposure determine the health outcome, factors which cannot be investigated by the Greater Bay Area Cancer Registry or the statewide registry.

### **15. Why didn't you tell us about this sooner?**

- A. As a part of its mission of cancer surveillance, CCR and its regional registries respond to citizen questions about possible cancer excess and requests for a cancer investigation. Such specific local analysis is not performed by CCR or its regional registry prior to being contacted about a cancer concern. GBACR and CCR began evaluating this concern immediately upon receiving a request for information.

### **16. Why is there TCE contamination in the area?**

- A. The Middlefield-Ellis-Whisman Superfund site was home to several manufacturing and industrial facilities. While in operation, these former facilities required the storage, handling, and use of a variety of chemicals. The primary chemicals of concern at the site are TCE and its degradation products: cis-1,2-dichloroethene and vinyl chloride. During operations, some of the chemicals leaked or were otherwise released to the ground, impacting soil and groundwater. In 1981 and 1982, investigations in the area of these facilities indicated that significant levels of contaminants had been released to the soil and groundwater.

**17. How would I know if I had non-Hodgkin lymphoma?**

- A. Non-Hodgkin lymphoma can only be diagnosed by a physician. If you have questions about cancer, please contact your regular healthcare provider. General information about cancer may be found at the American Cancer Society, [www.cancer.org](http://www.cancer.org).

**18. Can someone with non-Hodgkin lymphoma give it to someone else?**

- A. You cannot "catch" cancer from someone who has it. There is no evidence that close contact or things like sex, kissing, touching, sharing meals, or breathing the same air can spread cancer from one person to another.

**19. What should someone do if she thinks she has been exposed to TCE?**

- A. If you believe that you have been exposed to TCE you should consult your regular healthcare provider. If you have recently been exposed to trichloroethylene, it might be detected in your breath, blood, or urine. The breath test, if it is performed soon after exposure, can tell if you have been exposed to even a small amount of trichloroethylene. Exposure to larger amounts is assessed by blood and urine tests, which can detect trichloroethylene and many of its breakdown products for up to a week after exposure. However, exposure to other similar chemicals can produce the same breakdown products, so their detection is not absolute proof of exposure to trichloroethylene. This test isn't available at most doctors' offices, but can be done at special laboratories that have the right equipment. Ask your local healthcare provider.

**20. What's being done to clean up the TCE contamination?**

- A. Clean-up activities at the Middlefield-Ellis-Whisman Superfund site are being addressed through the federal Environmental Protection Agency and other responsible parties. For information on those activities, please visit <http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/ViewByEPAID/CAD982463812?OpenDocument#approach>

**21. What are CDPH's next steps?**

- A. The Greater Bay Area Cancer Registry and the California Cancer Registry will continue to monitor the area for these cancers and provide information to the Santa Clara County Public Health Department.

Fact Sheet on TCE

<http://www.atsdr.cdc.gov/tfacts19.pdf>